

## CLAIMS

1. A sports ball valve comprising:  
  
a mounting member being adapted to provide for mounting of the valve; and  
  
a valve element connected to the mounting member and being of a conical or frusto-  
5 conical shape having its reduced diameter portion directed in a forward flow direction, the  
valve element including a collapsible aperture located at or adjacent the reduced diameter  
portion and which in an open condition allows for flow of a fluid in the forward direction  
through the valve whilst in a closed condition the collapsible aperture prevents flow of the  
fluid in a reverse direction, the collapsible aperture being opened by the fluid pressure alone.
- 10 2. A sports ball valve as claimed in claim 1 arranged for inflation without penetrating  
the valve element or collapsible aperture with an injector.
3. A sports ball valve as claimed in claim 1 or claim 2 wherein the valve element is  
configured to provide opening of the collapsible aperture on application of a predetermined  
axial force to the mounting member.
- 15 4. A sports ball valve as claimed in any one of the preceding claims wherein the valve  
includes an isolation zone disposed intermediate the mounting member and the valve  
element and being configured to reduce the likelihood of inadvertent opening of the  
collapsible aperture on application of operational forces to the mounting member.
5. A sports ball valve as claimed in claim 4 wherein the isolation zone includes a  
20 peripheral recess at which the cross-sectional area of the valve is reduced.
6. A sports ball valve as claimed in either claims 4 or 5 wherein the isolation zone is  
approximately 30 to 80% of the maximum cross-sectional area of the conical or frusto-  
conical-shaped valve element.
7. A sports ball valve as claimed in any one of the preceding claims wherein the  
25 mounting member is either disc-shaped or in the form of a cylinder connected to and coaxial  
with the conical or frusto-conical shaped valve element.
8. A valve comprising:  
  
a mounting member being adapted to provide for mounting of the valve; and

a valve element including a collapsible aperture which in an open condition allows for flow of a fluid in a forward direction through the valve whilst in a closed condition the collapsible aperture prevents flow of fluid in a reverse direction, the valve element being connected to the mounting member via an isolation zone that reduces likelihood of the  
5 collapsible aperture moving to the open condition under impact.

9. A valve as claimed in claim 8 wherein the collapsible aperture is arranged to open under fluid pressure alone.

10. A valve as claimed in claim 8 wherein the collapsible aperture is arranged to receive an injector.

10 11. A valve as claimed in any one of claims 8 to 10 wherein the valve element is at least in part formed from a resilient material.

12. A valve as claimed in claim 11 wherein the isolation zone is more flexible than the valve element.

13. A valve as claimed in any one of claims 8 to 12 wherein the isolation zone comprises  
15 an annular recess at which the cross-sectional area of the valve is reduced.

14. A valve as claimed in any one of claims 8 to 13 wherein the isolation zone comprises a narrowed neck portion of the valve which joins the mounting member and the valve element.

15. A valve as claimed in either of claims 13 or 14 wherein the cross-sectional area of the  
20 valve at the isolation zone is approximately 30 to 80% of the maximum cross-sectional area of the valve element.

16. A valve as claimed in any one of claims 8 to 15 wherein the isolation zone is one of two or more isolation zones.

17. A valve as claimed in any one of claims 8 to 16 comprising another mounting  
25 member, the other mounting member being connected to the mounting member via one or more of the isolation zones or additional isolation zones which allow the mounting member and other mounting member to move substantially independently of each other.

18. A valve as claimed in claim 17 wherein the mounting member and other mounting member are connected to, or arranged for connection to, a mounting surface.

19. A valve as claimed in claim 18 wherein one of the mounting surfaces is connected to or forms part of a first vessel.
20. A valve as claimed in claim 19 wherein another of the mounting surfaces is connected to or forms part of a second vessel.
- 5 21. A valve as claimed in any one of claims 17 to 20 wherein the one or more additional isolation zones comprise a flexible sleeve that surrounds at least in part the isolation zone of the valve element.
22. A valve as claimed in claim 21 wherein the flexible sleeve comprises a sleeve which is extendable and contractible in an axial direction.
- 10 23. A valve comprising:
- a mounting member being adapted to provide for mounting of the valve; and
- a valve element connected to the mounting member and including a collapsible aperture which in an open condition allows for flow of a fluid in a forward direction through the valve whilst in a closed condition the collapsible aperture prevents flow of the fluid in a reverse direction, the valve element being configured to provide opening of the collapsible aperture on application of a predetermined force to the mounting member.
- 15 24. A valve as claimed in either of claims 3 or 23 wherein application of said predetermined force to the mounting member promotes opening of the collapsible aperture for inflation of the ball.
- 20 25. A valve as claimed in either of claims 3 or 23 wherein application of said predetermined force to the mounting member promotes deflation of the ball.
26. A valve as claimed in any one of the preceding claims wherein the mounting member is formed integral with the valve element so that the valve is of a one-piece construction.
- 25 27. A valve as claimed in any one of the preceding claims formed predominantly of a polymeric or rubber material.
28. A valve as claimed in any one of claims 8 to 27 wherein the mounting member is connected to, or is arranged for connection to, an inflatable bladder.

29. A valve as claimed in any one of claims 8 to 28 wherein the valve element is of a conical or frusto-conical shape having its reduced diameter portion directed in the forward flow direction and the collapsible aperture is located at or adjacent the reduced diameter portion.
- 5 30. A vessel having a valve as claimed in any one of claims 8 to 29.
31. A sports ball having a valve as claimed in any one of claims 8 to 30.